

Appi. No. 10/079,114

Amendment Dated April 29, 2004

Reply to Office Action of December 29, 2003

Remarks:

Reconsideration of the application is requested.

Claims 1-17 and 26 remain in the application. Claim 1 has been amended.

In the third paragraph on page 2 of the above-identified Office action, the Examiner has rejected claims 8 and 11-13 as not enabling one with ordinary skill in the art to practice the invention under 35 U.S.C. § 112, first paragraph.

More specifically, the Examiner has stated that, in claim 8, the term "dendritic structure" was not enabled. Furthermore, the Examiner objected that the dendritic structure were not shown in the figures. Dendritic structures of zinc oxide are well known in the art of zinc batteries. See U.S. Patent Nos. These patents describe the formation of dendritic zinc oxide in the context of unwanted oxide formation on a battery electrode. From these patents, one with ordinary skill in the art would understand a mechanism for making dendritic zinc oxide structures. U.S. patent 6,121,669 teaches the use of dendritic structures, generally, for improving adhesion; see col. 7, lines 3-5. One with ordinary skill in the art who read the specification of the instant application would be able to practice the invention, dendritic structures made of zinc oxide by reading the available prior art on zinc oxide

App. NO. 10/079,114

Amendment Dated April 29, 2004

Reply to Office Action of December 29, 2003

and on adhesion promotion. Therefore, the invention as claimed is enabled under 35 U.S.C. § 112, first paragraph.

Furthermore, the drawings are adequate under Rule 1.83 because the claimed dendritic structures are shown in Fig. 1. The dendritic structures form an adhesive promoting layer 31 that is shown in Fig. 1. The individual dendritic structures composing the adhesive promoting layer are microscopic, and at the scale of Fig. 1, can only be seen collectively as part of the overall layer.

The Examiner rejected claims 11 and 12 for including the term "bonding channel" as not being enabling under 35 U.S.C. § 112, first paragraph. A bonding channel is described in the originally-filed specification at page 20, line 24, through page 21, line 26. Based on this disclosure, Fig. 2 has been replaced with Figs. 2A and 2B to show the embodiments of the bonding channel. Based on this understanding, claims 11 and 12 would enable one with ordinary skill in the art to practice the invention.

The Examiner rejected claim 13 for containing the term "conductor tracks" as not being enabled. Conductor tracks are defined in the original specification at page 21, line 16, through page 21, line 26. Based on the disclosure, Fig. 2 has been replaced with Fig. 2C. Based on this understanding,

App1. No. 10/079,114

Amendment Dated April 29, 2004

Reply to Office Action of December 29, 2003

claim 13 would enable one with ordinary skill in the art to practice the invention.

Accordingly, the specification and the claims meet the requirements of 35 U.S.C. § 112, first and second paragraphs. Should the Examiner find any further objectionable items, counsel would appreciate a telephone call during which the matter may be resolved. The changes are neither provided for overcoming the prior art nor do they narrow the scope of the claim for any reason related to the statutory requirements for a patent.

In the fourth paragraph on page 2 of the Office action, the Examiner contested the definition of "profile-sawn contours" and argued that the term had a broader meaning. However, "Profile-sawn contour" is a term of art and has a special meaning within the art and application. A "profile-sawn contour" is made in the sawn edge (i.e. the vertical edge) of the semiconductor chip. The object of the invention is to create improved form-locking connections between the plastics composition and the semiconductor (Spec., page 3, line 21, though page 4, line 5). To achieve the object of the invention, the profile-sawn contours must be cut into the semiconductor composition.

Appl. No. 10/079,114

Amendment Dated April 29, 2004

Reply to Office Action of December 29, 2003

To further explain the difference between "profile-sawn contours" and vertical cuts, reference is made to the specification. An edge formed by a profile saw cannot encompass a vertical or straight cut. As shown in Figs. 4-5 and page 23, line 22, to page 24, line 6, of the specification, a profile saw 20 is used to form the notch 11 and surface 6 shown in Fig. 5. In contrast, Figs. 6 and 7 show a normal saw blade 22 of a separating saw 23, which is used to make a normal vertical cut of width d to separate the components 1.

When reading the claims, care should be taken to distinguish "profile-sawn contours" from "contours with a profile". The intended meaning of "profile-sawn contours" is to mean contours made by using a profile saw. A profile saw makes lateral cuts into the semiconductor material; see especially claim 26.

This understanding emphasizes the distinctions between the invention as claimed (even before claim 1 was amended) and the prior art.

In the second paragraph on page 3 of the Office action, the Examiner rejected claims 1, 9, and 26 as being fully anticipated by Dando under 35 U.S.C. § 102. The rejection has been noted and the claims have been amended in an effort to

App. No. 10/079,114

Amendment Dated April 29, 2004

Reply to Office Action of December 29, 2003

define more clearly the invention of the instant application. Support for the changes is found in Figs. 1-3 of the drawing and is implicit from the specification page 19, line 26, through page 20, line 1, of the specification (i.e. if the semiconductor is "surrounded by the edge of plastic 7", it is therefore not covered).

Before discussing the prior art in detail, a brief review of the invention as claimed is provided. Amended claim 1 calls for, *inter alia*, an electronic component having the following features:

a semiconductor chip including a semiconductor material, said semiconductor chip having an active upper side with a central portion and edge portions, a passive rear side, and a sawn edge;

said sawn edge being formed of said semiconductor material and surrounding said semiconductor chip, said sawn edge having profile-sawn contours extending into said edge portion of said active upper side; and

a plastics composition forming a plastic edge, said plastic edge surrounding said sawn edge and being in a form-locking engagement with said profile-sawn contours;

said central portion of said active upper side being uncovered by said plastics composition.

Amended claim 1 clarifies the difference between the claimed electronic component of the instant application and Dando. Dando teaches only straight edges. Claim 1 of the instant

Appl. No. 10/079,114

Amendment Dated April 29, 2004

Reply to Office Action of December 29, 2003

application describes that the "central portion [as distinguished from the edge portion] of said active upper side [is] uncovered by said plastics composition." Furthermore, in contrast to the Examiner's analysis, claim 26 states that the profile-sawn contours extend into said edge portion of said active upper side, and not that the plastic composition extends into the edge portion as stated by the Examiner. Claim 26 is therefore patentable for that additional reason.

In the penultimate paragraph on page 3 of the Office action, the Examiner rejected claims 1, 9, 10, and 26 as being unpatentable over Dando under 35 U.S.C. § 103(a). In addition to the reasons discussed above, claim 1 of the instant application is patentable over Dando because the claimed form-locking connection of plastics composition and the profile-sawn contour is not obvious. Such a form-locking connection produces a more intensive bond with the edge of the semiconductor chip and leads to improved robustness during processing, testing of the package, transportation, and mounting to external circuit boards. The edge stability of the semiconductor chip is also improved so that the devices on the chip are less likely to become damaged.

In the final paragraph on page 3 of the Office action, the Examiner rejected claims 6 and 7 as being obvious over 35 U.S.C. § 103(a). Claims 6 and 7 ultimately depend on claim 1

App. No. 10/079,114

Amendment Dated April 29, 2004

Reply to Office Action of December 29, 2003

and are patentable over the prior art for the same reasons as claim 1, which were discussed previously.

In the first paragraph on page 4 of the Office action, the Examiner rejected claims 1, 4, 9, and 26 as being anticipated by Brooks et al. under 35 U.S.C. § 102. In contrast to amended claim 1 of the instant application, Brooks et al. do not teach "said central portion of said active upper side being uncovered by said plastics composition." In Brooks et al., an encapsulation material 36 or 100 is taught; the encapsulation material covers the active side of the semiconductor chip. Because Brooks et al. do not teach the uncovered active side according to claim 1 of the instant application, Brooks et al. do not anticipate claims 1, 4, 9, and 26 as amended.

In the second paragraph on page 4 of the Office action, the Examiner rejected claims 1, 16, and 26 as being anticipated by JP 2144946 abstract under 35 U.S.C. § 102. Like Brooks et al., JP 2144946 teaches to encapsulate the semiconductor element 1 with the sealing resin 7. JP 2144946 does not teach the uncovered active side according to claim 1 of the instant application. Accordingly, JP 2144946 does not anticipate claim 1 or any of the claims depending therefrom.

Appl. No. 10/079,114

Amendment Dated April 29, 2004

Reply to Office Action of December 29, 2003

Accordingly, none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1. Therefore, claim 1 is patentable over the art. Moreover, because claims 4, 6-13, 16, and 26 are ultimately dependent on claim 1, they are believed to be patentable as well.

Claims 2-3, 5, 14-15, and 17 were previously allowed.

In view of the foregoing, reconsideration and allowance of claims 1-17 and 26 are solicited. In the event the Examiner should still find any of the claims to be unpatentable, please telephone counsel so that patentable language can be substituted.

Petition for extension is herewith made. The extension fee for response within a period of one month pursuant to Section 1.136(a) in the amount of \$110 in accordance with Section 1.17 is enclosed herewith.

If an extension of time for this paper is required, petition for extension is herewith made.

Appl. No. 10/079,114

Amendment Dated April 29, 2004

Reply to Office Action of December 29, 2003

Please charge any other fees that might be due with respect to
Sections 1.16 and 1.17 to the Deposit Account of Lerner and
Greenberg, P.A., No. 12-1099.

Respectfully submitted,



LOREN DONALD PEARSON

Reg. No. 42,987

LERNER & GREENBERG, P.A.

P.O. Box 2480

Hollywood, FL 33022-2480

Tel: (954) 925-1100

Fax: (954) 925-1101